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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.        | CONFIRMATION NO. |
|---|-------------|----------------------|----------------------------|------------------|
| 09/812,921  | 03/20/2001  | Giao Vinh Nguyen     | 0055-IS                    | 9141             |
| 7590  | 12/30/2004  |                      | EXAMINER<br>PRICE, ELVIS O |                  |
| Kenneth D. Tremain<br>UNIROYAL CHEMICAL COMPANY, INC.<br>World Headquarters<br>Middlebury, CT 06749 |             |                      | ART UNIT<br>1621           | PAPER NUMBER     |

DATE MAILED: 12/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/812,921             | NGUYEN ET AL.       |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Elvis O. Price         | 1621                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

Claims 1-15 are pending in the application.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams et al. {US Pat. 2,585,983}.

Applicants claim, in brief, a process for mono-alkylating at least one monocyclic aromatic hydrocarbon comprising reacting the monocyclic aromatic hydrocarbon with at least one alpha-olefin having from 4 to 20 carbon atoms in the presence of an anhydrous alkane sulfonic acid at a temperature below about 280 F.

Adams et al. teach a process for alkylating aromatic hydrocarbons such as benzene, toluene, xylenes, etc., comprising reacting the aromatic hydrocarbon with a mono-olefin fraction (synthon olefins), having between 7 to 15 carbon atoms, in the

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presence of anhydrous alkanesulfonic acids (producing the light, heart and heavy alkymers) at preferable temperatures of from 240 to 260 F (see Col. 3, lines 23-61; Col. 4, lines 33-55; Col. 9, lines 13-22; Col. 13, lines 18-24 and Table 2). The difference between the presently claimed invention and what the Adams et al. reference teaches is that the Adams et al. reference is silent with regard to the mono-olefin fraction containing at least one alpha-olefin. However, it would not be unreasonable for one having ordinary skill in the art to envision that the synthon olefins used by Adams et al., in preparing alkylated aromatic hydrocarbons, contains at least one alpha-olefin when considering that the Adams et al. alkylated aromatic hydrocarbons yield high quality detergents upon sulfonation and neutralization (see Col. 4, lines 44-66).

The presently claimed invention would have been *prima facie* obvious to one having ordinary skill in the art, in view of the teachings of the Adams et al. reference, because Adams et al. teach a process for alkylating aromatic hydrocarbons such as benzene, toluene, xylenes, etc., comprising reacting the aromatic hydrocarbon with a mono-olefin fraction (synthon olefins), having between 7 to 15 carbon atoms, in the presence of anhydrous alkanesulfonic acids (producing the light, heart and heavy alkymers) at preferable temperatures of from 240 to 260 F.

One having ordinary skill in the art, desiring to prepare high quality detergents from mono-alkylated aromatic hydrocarbons (light alkymers), would have been motivated to react an olefin mixture (such as Synthon mono-olefins) containing at least one alpha-olefin, having from 4-20 carbon atoms, with aromatic hydrocarbons such as benzene, xylenes, toluene, etc., before sulfonation of the mono-alkylated aromatic

hydrocarbon. Therefore the presently claimed invention would have been obvious to one having ordinary skill in the art.

### ***Response to Arguments***

Applicants' arguments filed 10/20/04 have been fully considered but they are not persuasive.

Applicants argue the presently claimed process prepares the mono-alkylated product exclusively so that the alkylation mixture could be used directly without requiring a costly purification step.

This argument is not convincing because applicants have not demonstrated that the mono-alkylated product is produced exclusively via applicants' process. In fact, applicants have attached a comparison table, which shows that some polyalkylate is generated- -regardless of how little. Additionally, the scope of applicants' claim language is not limited to producing the mono-alkylated product exclusively or even as the major product.

Applicants argue that a near stoichiometric amount of starting aromatic is employed and dealkylation is not utilized in order to enhance the monoalkylation, i.e., the monoalkylation product is formed directly from the alkylation in the present process.

This argument is not persuasive because it is well within the expertise of one having ordinary having ordinary skill in the art to manipulate molar ratios of reactants of an aromatic alkylation reaction to affect the degree of alkylation on the aromatic ring. Thus, it would have been obvious to one having ordinary skill in the art, desiring to

obtain, predominantly, the mono-alkylated product, to use stoichiometric amounts of the starting reactants (i.e., aromatic compound and olefin).

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

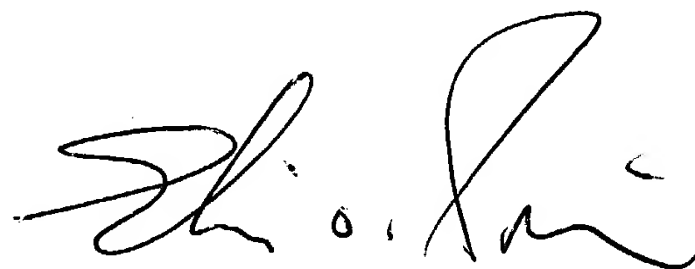
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elvis O. Price whose telephone number is 571 272-0644. The examiner can normally be reached on 8:30 am to 5:00 pm; Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571 272-0646. The fax phone numbers for the organization where this application or proceeding is assigned is 571 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-1235.

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A handwritten signature in black ink, appearing to read 'Elvis O. Price', with a stylized, cursive script.

Elvis O. Price

December 27, 2004